

MARIE CUEVAS HEFFERN

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PROFESSIONAL EXPERIENCE AND TRAINING

University of California, Davis (July 2017 – Present) **Davis, CA**
Assistant Professor, Department of Chemistry
CAMPOS Faculty Scholar

University of California, Berkeley (January 2015 – June 2017) **Berkeley, CA**
UC President's Postdoctoral Fellow, Department of Chemistry
Advisor: Christopher J. Chang

Northwestern University (December 2009 – November 2014) **Evanston, IL**
NSF Graduate Research Fellow, Department of Chemistry
Advisor: Prof. Thomas J. Meade

University of Southern California (January 2008 – May 2009) **Los Angeles, CA**
WiSE Undergraduate Research Fellow, Department of Chemistry
Advisor: Prof. Richard L. Brutchey

EDUCATION

Ph.D. Northwestern University (June 2014)
Inorganic Chemistry, Subfield: Life Processes (June 2014)
Thesis: "Cobalt(III) Schiff Base Complexes as Inhibitors of Proteins Involved in Disease Progression"

B.S./B.A., University of Southern California (May 2009)
Dual Degree: Chemistry, B.S; Religion, B.A.;
Ancient Religions and Classical Languages, Minor

PUBLICATIONS

<http://tinyurl.com/MCHscholar>

† Denotes equal contribution

* Denotes corresponding authorship

Maiden Name – Cuevas, M. A.

17. Stevenson, M. J., **Heffern, M. C.*** Sounding out dysfunctional oxygen metabolism: a small-molecule probe for photoacoustic imaging of hypoxia. *Biochem.*, ASAP (10.1021/acs.biochem.8b00011. **Invited contribution for a Viewpoint article.**
16. **Heffern, M. C.*** Diversifying the Glowing Bioluminescent Toolbox. *ACS Cent. Sci.*, 2017, 3, 1234-1236. **Invited contribution for a First Reactions article.**
15. Aron, A. T.,[†] **Heffern, M. C.**,[†] Lonergan, Z. R.,[†] Vander Wal, M. N., Baker, B. R.,[†] Spangler, B., Zhang, Y., Park, H., Stahl, A., Renslo, A. R., Skaar, E. P., Chang, C. J. In vivo bioluminescence imaging of labile iron accumulation in a murine model of *Acinetobacter baumannii* infection. *Proc. Natl. Acad. Sci.*, 2017, 114, 12669-12674.

14. **Heffern, M. C.**,[†] Park, H.,[†] Au-Yeung, H.,[†] Van de Bittner, G. C., Ackerman C. M.; Stahl, A., Chang, C. J. In vivo bioluminescence reveals copper deficiency in a murine model of non-alcoholic fatty liver disease. *Proc. Natl. Acad. Sci.*, 2016, 113, 14219-14224. **Featured in C&E News.**
13. **Heffern, M. C.**,[†] Reichova, V.,[†] Coomes, J. L., Harney, A. S., Bajema, E.; Meade, T. J. Tuning Cobalt(III) Schiff Base Complexes as Activated Protein Inhibitors. *Inorg. Chem.*, 2015, 18, 9066-74.
12. **Heffern, M. C.**, Velasco, P. T., Matosziuk, L. M., Coomes, J. L., Karras, C., Eckermann, A. L., Klein, W. B., Meade, T. J. Modulation of Amyloid- β Oligomerization by Co(III) Schiff Base Complexes. *ChemBioChem*, 2014, 15, 1584-1589.
11. **Heffern, M. C.**,[†] Matosziuk, L. M.,[†] Meade, T. J. Lanthanide Probes for Bioresponsive Imaging. *Chem. Rev.*, 2014, 114, 4496-4539. **>300 Citations to date.**
10. **Heffern, M. C.**; Kurutz, J.; Meade, T. J. Spectroscopic Elucidation of the Inhibitory Mechanism of Cys₂His₂ Zinc Finger Transcription Factors by Cobalt(III) Schiff Base Complexes. *Chem. Eur. J.*, 2013, 19, 17043-17053. **Featured Key Article by Global Medical Discovery (June 2014).**
9. **Heffern, M. C.**; Yamamoto, N.; Holbrook, R. J.; Eckermann, A. E.; Meade, T. J. Cobalt Complexes as Promising Therapeutic Agents. *Curr. Opin. Chem Biol.* 2013, 17, 189-196.
8. Matosziuk, L.M.; Leibowitz, J. H.; **Heffern, M. C.**; Macrenaris, K. W.; Ratner, M. A.; Meade, T. J. Structural Optimization of Zn(II) Activated MR Imaging Probes. *Inorg. Chem.*, 2013, 52, 12250-12261.
7. Manus, L. M.; Holbrook, R. J.; Atesin, T. A.; **Heffern, M. C.**; Harney, A. S.; Eckermann, A. E.; Meade, T. J. Axial Ligand exchange of N-heterocyclic Cobalt(III) Schiff Base Complexes: Molecular Structure and NMR Solution Dynamics. *Inorg. Chem.*, 2013, 52, 1069-1076.
6. Matosziuk, L. M.; Holbrook, R. J.; Manus, L. M.; **Heffern, M. C.**; Ratner, M. A.; Meade, T. J. Rational Design of [Co(acacen)L₂]⁺ Inhibitors of Biological Activity. *Dalton Trans.*, 2013, 42, 4002-12.
5. Velasco, P. T.; **Heffern, M. C.**; Sebollela, A.; Popova, I. A.; Lacor, P. N.; Lee, K. B.; Zun, X.; Tiano, B. N.; Viola, K. L.; Eckermann, A. L.; Meade, T. J.; Klein, W. L. Synapse-Binding Subpopulations of A β Oligomers Sensitive to Peptide Assembly Blockers and scFv Antibodies. *ACS Chem. Neurosci.*, 2012, 3, 972-981.
4. Hurtado, R.; Harney, A. S.; **Heffern, M. C.**; Holbrook, R. J.; Holmgren, R.; Meade, T. J. Specific inhibition of the transcription factor Ci by a Cobalt(III)-Schiff base-DNA conjugate. *Mol. Pharm.*, 2012, 9, 325-333.
3. Beier, C. W.; **Cuevas, M. A.**; Brutchey, R. L. Low-Temperature Synthesis of Solid-Solution Ba_xSr_{1-x}TiO₃ Nanocrystals. *J. Mater. Chem.*, 2010, 20, 5074-5079.
2. Beier, C. W.; **Cuevas, M. A.**; Brutchey, R. L. Effect of Surface Modification on the Dielectric Properties of BaTiO₃ Nanocrystals. *Langmuir*, 2010, 26, 5067-5071.
1. Beier, C. W.; **Cuevas, M. A.**; Brutchey, R. L. Room-Temperature Synthetic Pathways to Barium Titanate Nanocrystals. *Small*, 2008, 4, 2102-2106. **Most Accessed List for November and December 2008.**

SEMINARS AND PRESENTATIONS

Invited Seminars and Conference Talks

- C&EN Talented 12 Symposium, National ACS Meeting. Washington, D.C. 2017 August 20-24. *Invited Seminar by Chemical & Engineering News and the American Chemical Society.*
- UC President's and UC Davis Chancellor's Post-doctoral Fellows Special Seminar Series. Davis, CA. 2017 April 10. *Invited Seminar by the College of Agriculture and Environmental Sciences, hosted by the Department of Nutrition.*

- Gordon Research Conference: Metals Medicine. Andover, NH. 2016 June 26-July 1. *Selected among poster presenters for talk.*
- Gordon Research Seminar: Bioinorganic Chemistry. Ventura, CA. 2014 Jan 31-Feb 2.
- Great Lakes Regional ACS Meeting: Bioinorganic Chemistry Symposium. La Crosse, WI. 2013 June 5-8.
- Gordon Research Conference: Metals in Medicine. Andover, NH. 2012 June 24-29. *Selected among poster presenters for talk; Awarded for outstanding oral presentation.*
- Zing Conference: Coordination Chemistry. Xcaret, Mexico. 2012 Dec 9-13. Talk.
- ACS Southern California Undergraduate Research Conference. Los Angeles, CA. 2009 Apr 25. Talk.

Conference Poster Presentations

- Gordon Research Conference: Metals in Biology. Ventura, CA. 2018 Jan 21-26.
- Gordon Research Conference: Metals in Biology. Ventura, CA. 2017 Jan 22 – 27.
- Gordon Research Conference: Metals Medicine. Andover, NH. 2016 June 26-July 1.
- Gordon Research Conference: Metals in Biology. Ventura, CA. 2014 Jan 25 – 31.
- Imaging in 2020. Jackson, WY. 2012 Sept 30-Oct 4.
- Gordon Research Conference: Metals in Medicine. Andover, NH. 2012 June 24-29. Awarded for outstanding poster.
- Midwest/Great Lakes Joint Regional ACS Meeting. St. Louis, MO. 2011 Oct 19-22. *Selected for Sci-Mix Poster Session.*

Internal/Departmental Presentations

- UC President's Postdoctoral Fellowship Program Spring Academic Retreat. Lake Arrowhead, CA. 2016 April 15-17. Talk.
- Biochemistry, Biophysics, and Structural Biology Conference and Retreat UC Berkeley Divisional Retreat, Department of Molecular and Cell Biology. Pacific Grove, CA. 2016 Jan 10-12. Talk.
- Basolo-Ibers-Pearson Lecture at Northwestern University. Evanston, IL. 2011 Oct 8. Oral.
- Introduction to Graduate Education at Northwestern Days. Evanston, IL. 2013 April 11. Poster. *Outreach program to introduce faculty and selected students from minority-serving institutions to graduate research primarily in the STEM fields.*
- Basolo-Ibers-Pearson Lecture at Northwestern University. Evanston, IL. 2014 Mar 10. Talk. *Selected speaker for Prospective Student Visit Weekend.*
- Biophysics Divisional Seminar at Northwestern University. Evanston, IL. 2012 Jan 18. Talk.
- Basolo-Ibers-Pearson Lecture at Northwestern University. Evanston, IL. 2011 Oct 8. Talk.
- University of Southern California Undergraduate Research Symposium. Los Angeles, CA. 2009 Apr 15. Poster.
- John Stauffer Symposium USC Department of Chemistry. Los Angeles, CA. 2009 Apr 7. Poster.
- University of Southern California Undergraduate Research Symposium. Los Angeles, CA. 2009 Apr 9. Poster.

SELECTED HONORS, AWARDS, AND AFFILIATIONS

Funding

- Cancer Therapeutics Program Pilot Funding (NIH funding to Comprehensive Cancer Center at UC Davis, 2018)
- CAMPOS Faculty Scholar Award (2017-2018)
- University of California President's Postdoctoral Fellowship (2015-2017): *Awarded to 3-5% of all applicants across the ten University of California campuses*

- National Science Foundation Graduate Research Fellowship (2011-2014)
- National Institutes of Health Ruth Kirschstein Pre-doctoral National Research Service Award (Awarded 2011; Declined)
- Women in Science and Engineering Undergraduate Research Award (2008)
- Undergraduate Associates Research Fellowship (2008)

Honors and Recognitions

- CAMPOS Faculty Scholar (2017): *Selected among incoming STEM faculty at UC Davis*
- Chemical & Engineering News' Talented 12 (2017)
- Commendation for Excellence in Graduate Research (2015)
- Gelewitz Award (2013): *Top two senior graduate students for excellence in research and service*
- Presidential Fellowship Nominee for the Department of Chemistry (2013)
- USC Chemistry and Biochemistry Outstanding Undergraduate Research Award (2009)
- Undergraduate Research Symposium Prize Winner (2009): *1st Place Physical Sciences and Most Innovative*
- Discovery Scholar and Prize Finalist (2009)
- Renaissance Scholar and Prize Winner (2009)

Current Affiliations

- American Chemical Society, Division of Inorganic Chemistry
- UC Davis Comprehensive Cancer Center
 - Dual Membership: Cancer Therapeutics and Molecular Oncology

TEACHING EXPERIENCE AT UC DAVIS

Bioinorganic Chemistry CHE 228A (Winter 2017)

Inorganic Chemistry: Fundamentals CHE 124A (Fall 2017)

SELECTED LEADERSHIP EXPERIENCE AND PROFESSIONAL SERVICE

Invited Panelist for special webinar "Who Will Win the ChemNobel? Predicting the 2017 Nobel Laureate(s) in Chemistry" by Chemical & Engineering News

Journal Reviewer for *Scientific Reports* (2017), *Chemical Science* (2017), *ACS Central Science* (2017), *Bioorganic & Medicinal Chemistry Letters* (2017), *Coordination Chemistry Reviews* (2017), *Communications Biology* (2018)

Alumni Advisory Committee Member Northwestern University, Department of Chemistry (2015 – 2016)

Women in Science and Engineering, Founding Board Member Northwestern University and Evanston Township High School (2013-2014)

Niles West STEM Mentorship Program, Board Member Northwestern University (2013 – 2014)

Phi Lambda Upsilon Chemistry Honor Society President Northwestern University (2012-2013)

Phi Lambda Upsilon Chemistry Honor Society Service Chair Northwestern University (2011-2012)

Chemistry Recruitment Video Planning Committee Member Department of Chemistry (2012)

First-Year Student Orientation Planning Committee Member Department of Chemistry (2012): *Lead Organizer of the “Graduate Student Handbook: Answers to FAQs and Tips”*

SELECTED OUTREACH ACTIVITIES

Educational Outreach Committee, Department of Chemistry (2017 – Present)

Panelist for the Northern California Diversity Forum in Graduate Education (2016)

Niles West High School (2011-2014):

- Research Mentor from 2011 – 2013; Student Mentee in 2011-2012 achieved gold medals in both the regional and state science fairs
- Board member from 2013 – 2014 to expand mentorship opportunities for Northwestern University graduate students beyond Niles West High School

Women in Science and Engineering with Evanston Township High School (2011-2014):

- Founding board member:: coordinated and developed the program aimed at empowering young women in Evanston Township High School to continue pursuing advanced education in science and engineering

Kits & Cats Day at Northwestern University for Evanston Township High School (2013)

- Volunteer for “Day in the Life” targeted at students in the academic low-middle range; intended to attract students who may be on the fence about college for economic or cultural reasons.

Outreach Activities with Phi Lambda Upsilon Graduate Chemistry Honor Society:

President (2012-2013):

- Established partnership with Mather High School Mentorship Program
- Initiated service grants for which members can apply to receive funding for service initiatives
- Co-hosted the regional *National You Be the Chemist Challenge* for middle school students

PLU Service Chair (2011-2012)

- Achievements in the *Science in the Classroom* Program
 - Assembled the *first* Spanish-speaking team to work with the ESL 3rd grade class
 - Coordinated a field trip to Northwestern University for a science show
 - Initiated partnership with MRSEC to receive funding through NSF

Science in the Classroom (2010-2014),

- Demonstration Leader (2012, 2014), Team Leader (2011-2012), Team Member (3rd grade 2010-2011, Bilingual 3rd grade class 2012-2014)

Panelist for Career Day at Chicago Hope Academy (2012)

“Seeing is Believing” Demonstrator (2012)

- Program in Northwestern’s Center for Molecular Imaging for high school students to educate them on the role of chemistry in diagnosis and on imaging techniques such as MRI

Untamed Chemistry Project (2011-2012)

- Team of scientists aiming to produce short educational videos to make chemistry accessible to high school